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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAVID W. CANNELL,
HITENDRA MATHUR,
and
NGHI VAN NGUYEN,
Appellants

Appeal 2008-2902
Application 09/838,197¹
Technology Center 1700

Decided: May 22, 2008

Before CAROL A. SPIEGEL, LINDA M. GAUDETTE, and
MARK NAGUMO, *Administrative Patent Judges*.

SPIEGEL, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ Application 09/838,197 ("the 197 application"), titled "Composition and Methods for Lanthionizing Keratin Fibers Using at least One Organic Nucleophile and at least One Hydroxide Ion Generator," was filed 20 April 2001. The real party in interest is L'Oréal S.A. (REVISED APPEAL BRIEF UNDER 37 C.F.R. § 41.37, filed 25 July 2007 ("App. Br."), 4).

I. Statement of the Case

Appellants appeal under 35 U.S.C. § 134 from the final rejection of claims 1-74, 157, and 158. Claims 75-156, 159, and 160, the only other pending claims, have been withdrawn from consideration as being directed to non-elected subject matter (App. Br. 6; Ans² 2). We have jurisdiction under 35 U.S.C. § 6(b). We AFFIRM-IN-PART.

The subject matter on appeal is directed to compositions for chemically straightening ("relaxing") naturally curly hair. Claims 1 and 36 are illustrative and read (App. Br. 24 and 29-30):

1. A composition for lanthionizing keratin fibers comprising at least one organic nucleophile and at least one hydroxide ion generator, wherein said at least one organic nucleophile is present in an amount effective to increase the tensile strength of said keratin fibers, said amount ranging from greater than 0.1% but less than 3% by weight relative to the total weight of the composition, with the proviso that if said at least one organic nucleophile is chosen from cysteine and derivatives thereof, said at least one organic nucleophile is present in an amount greater than 1.5% but less than 3% by weight relative to the total weight of said composition and wherein the composition has a pH value effective to lanthionize the keratin fibers.

36. A pretreatment composition for lanthionizing keratin fibers comprising at least one organic nucleophile, wherein said pretreatment composition is applied to said keratin fibers prior to applying a relaxing composition, and further wherein said at least one organic nucleophile is present in an amount effective to increase the tensile strength of said keratin fibers.

² Examiner's Answer mailed 28 September 2007 ("Ans.").

The Examiner relies on the following references³ of record:

Kolc	5,223,252	Jun. 29, 1993
Mougin	5,753,215	May 19, 1998

The Examiner has rejected claims 1-5, 9-15, 17-24, 26-32, 34-40, 44-50, 52-59, 61-67, 69-73, 157, and 158 under 35 U.S.C. § 102(b) as anticipated by Kolc; and, claims 6-8, 16, 25, 33, 41-43, 51, 60, 68, and 74 under 35 U.S.C. § 103(a) as obvious over Kolc in view of Mougin (Ans. 3).

Appellants rely on a declaration by Nghi Van Nguyen, pursuant to 37 C.F.R. § 1.132, executed November 8, 2005 ("Van Nguyen Declaration") and an excerpt from MILADY'S HAIR STRUCTURE AND CHEMISTRY SIMPLIFIED, by Douglas D. Schoon, revised edition, Delmar Publishers Inc. (1993), pp. 191-192 ("Schoon") as evidence of patentability (App. Br. 37).

Appellants argue the rejected claims in four groups: (I) claims 1-5, 9-15, 17-24, 26-32, 34, 35, and 157 (App. Br. 11-16); (II) claims 36-40, 44-50, 52-59, 61-67, 69-73, and 158 (App. Br. 16-17); (III) claims 6-8, 16, 25, and 33 (App. Br. 18-21); and, (IV) claims 41-43, 51, 60, 68 and 74 (App. Br. 21-22). Therefore, we decide this appeal on the basis of claims 1, 6, 36, and 41. 37 C.F.R. § 41.37(c)(1)(vii).

II. Findings of Fact ("FF")

The following findings of fact and those set out in the Discussion are supported by a preponderance of the evidence of record.

A. Appellants' Application (Spec.)

- [1] Chemically straightening hair usually involves disrupting disulfide bonds of hair fibers (keratin) with an alkaline reducing agent;

³ No references to *et al.* are made in this opinion.

- mechanically straightening the hair, e.g., by combing; and, terminating the process when a desired degree of "relaxation" is reached by applying a neutralizing (oxidizing) agent (Spec. 2:1-6).
- [2] The alkaline reducing agent is normally a source of hydroxide ions (Spec. 2:7), such as sodium, lithium or potassium hydroxide or mixtures of calcium hydroxide and guanidine carbonate or a multivalent metal hydroxide and a complexing agent (Spec. 3:14 through 4:19).
- [3] "Lanthionized" refers to hair straightened by reaction with hydroxide ions which results in lanthionine bond formation, i.e., a $(-\text{CH}_2-\text{S}-\text{S}-\text{CH}_2-)$ bond is broken and a $(-\text{CH}_2-\text{S}-\text{CH}_2-)$ bond is formed (Spec. 2:8-9 and 17-19).
- [4] "These lanthionine cross-links are believed to make the hair more brittle" (Spec. 7:17-18).
- [5] Appellants' specification describes "a composition for lanthionizing keratin fibers" comprising a source of hydroxide ions and an "organic nucleophile . . . present in an amount effective to increase the tensile strength of the keratin fibers" (Spec. 5:14-16).
- [6] According to the 197 specification, the "reaction of organic nucleophiles . . . competes with the reaction forming lanthionine cross-links" and "increases at least one mechanical property of the keratinous fibers, such as tensile strength" (Spec. 9:3-5).
- [7] "[T]he phrase 'at least one organic nucleophile' refers to any organic nucleophile, whether in a stable or unstable form, which is effective in competing with the lanthionization process to increase the tensile strength of the keratin fibers" (Spec. 12:1-4).

- [8] Exemplary organic nucleophiles include cysteine, guanidine, basic amino acids, amines, alcohols, and mercaptans (Spec. 9:3-5; 12:4-5).
- [9] The 197 specification states, "One skilled in the art would recognize that, in some embodiments, cysteine may not be an acceptable nucleophile because of its activity as a reducing agent" (Spec. 14:15-16).

B. Schoon

- [10] According to Schoon, high alkaline (having pH levels between 12 and 13.5) reducing agents, such as sodium, potassium, and lithium hydroxides and guanidine carbonate, like low pH (pH between 6.5 and 8.5) reducing agents, such as sodium bisulfite, cause the disulfide bonds in hair to be broken and reformed (Schoon 191-192).
- [11] "Highly alkaline products, such as those mentioned above, create a new type of cross-link bond. Instead of two sulphur atoms forming a bridge, a single sulphur cross-link bond forms. . . . The new type of bond is called a **lanthionine cross-link**." [Schoon 192, original emphasis.]

C. Kolc

- [12] Kolc discloses "a mild, alkaline permanent wave reducing composition" comprising a cysteine reducing agent and a monothioglycolate or monothioglycolic acid ester (Kolc 4:31-43).
- [13] Exemplary compositions formulated for use with bleached hair preferably comprise about 2.0 wt.% to about 3.0 wt.% cysteine and sufficient additional alkali, such as an ammonia or metal hydroxide, if necessary, to produce a pH of about 7.5 to about 9.5 (Kolc 4:46-63; 5:61-67).

- [14] Kolec's exemplary "COMPOSITION 3 (pH:7.5) BLEACHED HAIR" contains 2.00 wt.% L-cysteine free base and sufficient ammonium hydroxide (i.e., an aqueous ammonia solution) to produce a pH of 7.5 (Kolec 9:20-30).
- D. Mougin
- [15] Mougin discloses compositions formulated for use in a variety of cosmetics, including hair straightening compositions, mascaras and nail polish (Mougin 6:45-60).
- [16] The compositions "generally have a pH approximately between 7 and 7.2" (Mougin 6:43-44) and contain a pseudo-latex which is said to make the composition "difficult to remove from its support [e.g., hair or nail keratin] by a simple washing with water or using a shampoo" (*id.* 1:19-24, bracketed text added).
- [17] According to Mougin, the polymers used to form the pseudo-latexes have carboxylic acid functions and are neutralized to keep the polymers water-insoluble and organic solvent soluble (Mougin 3:59 - 4:4).
- [18] In one embodiment, Mougin teaches using a combination of (a) neutralizing agents including polyvalent metal salts selected from bromides, chlorides, nitrates, acetates, carbonates, and sulphates of calcium, zinc, magnesium, barium, aluminum, and zirconium, and (b) co-neutralizing agents including diamines, such as lysine, arginine, and cystine, to obtain the desired degree of carboxylic acid function neutralization (Mougin 4:5-42).

III. Discussion

- A. Rejection of claims 1-5, 9-15, 17-24, 26-32, 34-40, 44-50, 52-59, 61-67, 69-73, 157, and 158 under § 102

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros., Inc. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). "It is well settled that a prior art reference may anticipate when the claim limitations not expressly found in that reference are nonetheless inherent in it. Under the principles of inherency, if the prior art necessarily functions in accordance with, or includes, the claimed limitations, it anticipates." *In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1349 (Fed. Cir. 2002) (citations and internal quotation marks omitted).

Claim 1 recites, in relevant part, a composition comprising at least one hydroxide ion generator and at least one organic nucleophile chosen from cysteine and derivatives thereof, wherein the organic nucleophile is present in an amount greater than 1.5 wt.% but less than 3.0 wt.% and wherein the composition has a pH value effective to lanthionize keratin fibers.

The Examiner found that Kolc teaches a "mild alkaline" reducing composition comprising from about 2.0% to about 3.0% of cysteine compound and metal hydroxides and, therefore, Kolc anticipates claim 1 (Ans. 3, 6). According to the Examiner, the recitation in claim 1 of "wherein the composition has a pH value effective to lanthionize the keratin fibers" is met because "this limitation does not indicate any specific values or ranges of pH to be used in the claimed composition" (Ans. 6).

Claim language is given its broadest reasonable interpretation in light of the supporting specification as it would be interpreted by one of ordinary

skill in the art. *In re American Academy of Science Tech Center*, 367 F.3d 1359, 1364 (Fed. Cir. 2004).

Based on the evidence of record, we find that one of ordinary skill in the art would have interpreted the recitation in claim 1 of "wherein the composition has a pH value effective to lanthionize the keratin fibers" to require a "high pH" level of about 12.5 to 13 (FF 10-11). Kolc teaches compositions having a pH range of about 7.5 to about 9.5 (FF 13-14). Moreover, the supporting 197 specification states "One skilled in the art would recognize that, in some embodiments, cysteine may not be an acceptable nucleophile because of its activity as a reducing agent" (FF 9). The Examiner has failed to establish Kolc's pH 7.5 to 9.5 reducing solution is effective to lanthionize keratin fibers or Kolc's cysteine reducing agent is an organic nucleophile as required by claim 1. Consequently, we reverse the rejection of claims 1-5, 9-15, 17-24, 26-32, 34-40, 44-50, 52-59, 61-67, 69-73, 157, and 158 under § 102.

B. Rejection of claims 6-8, 16, 25, and 33 under § 103

The Examiner rejected claims 6-8, 16, 25, and 33 under § 103 over the combined teachings of Kolc and Mougin (Ans. 3). Claims 6-8, 16, 25, and 33 ultimately depend from independent claim 1. Claim 1 is patentable over Kolc, based on this record. The Examiner has relied on Mougin solely for limitations in the dependent claims that are not taught by Kolc. Thus, Mougin does not make up any of the deficiencies of Kolc with regard to claim 1. "Dependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious." *In re Fine*, 837 F.2d 1071, 1076 (Fed. Cir. 1988). Hence, dependent claims 6-8, 16, 25,

and 33 are nonobvious under § 103. Consequently, we reverse the rejection of claims 6-8, 16, 25, and 33 under § 103.

C. Rejection of claims 36-40, 44-50, 52-59, 61-67, 69-73, and 158 under § 102

Claim 36 recites a pretreatment composition comprising at least one organic nucleophile present in an amount effective to increase the tensile strength of keratin fibers. While claim 36 does not delineate what is an effective amount, claim 71, which depends from claim 36, recites "said at least one organic nucleophile is present in an amount ranging up to 100% by weight" (App. Br. 35). Claim 72, which depends from claim 71, recites "said at least one organic nucleophile is present in an amount ranging from 0.001% to 10.0% by weight" (App. Br. 35). Furthermore, claim 36 does not require the claimed composition to be effective to lanthionize keratin fibers.

Therefore, consistent with the 197 specification, we broadly interpret claim 36 to encompass a composition comprising at least one organic nucleophile present in an amount ranging from 0.001 wt.% up to 100 wt.%, wherein the composition does not contain components inconsistent with applying the composition to keratin fibers, and in which the nucleophile is "present in an amount effective to increase the tensile strength of said keratin fibers," e.g., hair, prior to use of a conventional chemical hair straightening composition.

The Examiner found Kolc teaches a composition identical to the composition of claim 36, i.e., a composition comprising an organic nucleophile, cysteine, present within an effective amount about 2.0 wt.% to about 3.0 wt.% (Ans. 8). According to the Examiner, "Kolc's composition is

capable of performing the intended use of the claimed composition and, hence, the rejection . . . under 102 (b) is proper" (*id.*).

Appellants argue that Kolc's composition is an aqueous reducing composition, not a pretreatment composition for lanthionizing keratin fibers (App. Br. 16). Appellants further argue that Kolc fails to meet the limitation "wherein said pretreatment composition is applied to said keratin fibers prior to applying to a relaxing composition" as recited in claim 36 (App. Br. 17).

Appellants' arguments are misdirected because the recitation of intended use does no more than exclude compositions that could not be applied to hair prior to a lanthionizing step. In particular, Appellants have not shown that Kolc's cysteine-containing composition is incapable of increasing the tensile strength of keratin fibers, e.g., hair, when applied prior to application of the lanthionizing relaxer. Claim 36 is a claim to a composition of matter, not a method claim. It is not necessary for Kolc to describe an intended method of use in order to anticipate the claimed composition. Therefore, Appellants' arguments are unpersuasive.

Arguments based on the Van Nguyen Declaration, i.e., that Kolc teaches compositions limited to a pH range of about 7.5 to about 9.5 and cannot lanthionize hair, are not persuasive because the composition covered by claim 36 need have neither property. Patentability cannot be premised on "limitations" that are not recited or inherent in a claim.

Consequently, we affirm the rejection of claims 36-40, 44-50, 52-59, 61-67, 69-73, and 158 under § 102.

D. Rejection of claims 41-43, 51, 60, 68, and 74 under § 103

A claimed invention is not patentable if the subject matter of the claimed invention would have been obvious to a person having ordinary skill

in the art. 35 U.S.C. § 103(a); *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727 (2007); *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966). To render an invention obvious, the prior art does not have to address the same problem addressed by a patent applicant. *KSR*, 127 S.Ct. at 1741-42; *In re Kemp's*, 97 F.3d 1427, 1430 (Fed. Cir. 1996). Motivation to combine teachings need not be expressly stated in any prior art reference. *In re Kahn*, 441 F.3d 977, 989 (Fed. Cir. 2006). There need only be an articulated reasoning with rational underpinnings to support a motivation to combine teachings. *Id.* at 988.

The Examiner rejected claims 41-43, 51, 60, 68, and 74, which ultimately depend from independent claim 36, under § 103 over the combined teachings of Kolc and Mougin (Ans. 3). As argued, the critical claim is claim 41, which limits the at least one organic nucleophile of independent claim 36 to a basic amino acid chosen from lysine, arginine, and histidine (App. Br. 30). As noted above (FF 18), Mougin teaches one embodiment using a combination of neutralizing agents, e.g., polyvalent metal salts, and co-neutralizing agents, including diamines, such as lysine, arginine, and cystine, to neutralize carboxylic acid functions on pseudo-latexes in order to maintain the pseudo-latexes organic solvent soluble and water insoluble. The Examiner concluded it would have been obvious to incorporate a combination of neutralizing and co-neutralizing agents as taught by Mougin, i.e., polyvalent salts and lysine or arginine, into the composition of Kolc because Kolc teaches use of cysteine which is similar to cystine as taught by Mougin, i.e., cysteine and cystine are derivatives of propionic acid (Ans. 4 and 9).

The underpinnings of the Examiner's reasoning are insufficient to support a motivation to combine Kolc and Mougin. For example, the Examiner has not explained how pseudo-latexes relate to a pretreatment composition as recited in claim 41. The Examiner has not explained why one of ordinary skill in the art would have incorporated a diamine, such as lysine or arginine, into Kolc's composition in addition to cysteine, which is not a diamine.

Appellants argue that the Examiner has engaged in impermissible hindsight. We agree. The Examiner has not directed our attention to any credible evidence that equivalents for neutralizing pseudo-latexes (to maintain insolubility in water) would have been recognized as being useful in the compositions taught by Kolc as mild alkaline permanent wave reducing compositions. In particular, the Examiner has failed to provide a reasonable explanation how Kolc's use of cysteine leads, via Mougin's teachings, to an acid-neutralizing equivalence between Kolc's cysteine and Mougin's cystine. An arbitrary basis for chemical equivalence, in an arbitrary context, is not necessarily an equivalence recognized by an artisan considering the prior art relied on by the Examiner. Here, the only basis apparent for the Examiner's conclusions appears to be, as Appellants argue, Appellants' own specification. Consequently, we reverse the rejections of claims 41-43, 51, 60, 68, and 74 under § 103. However, we note that claims 41-43, 51, 60, 68, and 74 depend, indirectly, from a rejected base claim, claim 36.

IV. Order

Upon consideration of the record, and for the reasons given, it is

ORDERED that the decision of the Examiner rejecting claims 1-5, 9-15, 17-24, 26-32, 34, 35, and 157 under 35 U.S.C. § 102(b) as anticipated by Kolc is REVERSED;

FURTHER ORDERED that the decision of the Examiner rejecting claims 36-40, 44-50, 52-59, 61-67, 69-73, and 158 under 35 U.S.C. § 102(b) as anticipated by Kolc is AFFIRMED;

FURTHER ORDERED that the decision of the Examiner rejecting claims 6-8, 16, 25, 33, 41-43, 51, 60, 68, and 74 under 35 U.S.C. § 103(a) as obvious over Kolc in view of Mougin is REVERSED; and,

FURTHER ORDERED that no time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED-IN-PART

qsg

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